

CLAIMS

What is claimed is:

- 1 1. A component restraint system that is used to secure an electronic component to a circuit
2 board, comprising:
3 a backing plate;
4 a post extending from said backing plate, said post having a stop surface;
5 a spring radially disposed around said post; and
6 a clip which, when inserted onto said post, engages the stop surface of said post and
7 compresses said spring.
- 8 2. The restraint system of claim 1 further including a plurality of posts protruding from said
9 backing plate, each post having a clip and a spring disposed thereon.
- 10 3. The restraint system of claim 1 further including four posts protruding from said backing
11 plate and including stop surfaces, each post having a clip and a spring disposed thereon.
- 12 4. The restraint system of claim 2 wherein each post has an upper end distal from said
13 backing plate and the clip for each post is pushed down over the upper end until the clips engage
14 the stop surfaces of the posts.
- 15 5. The restraint system of claim 4 wherein said electronic component and circuit board are
16 disposed between said backing plate and said springs and, as said springs are compressed by said
17 clips, said electronic component is secured to said circuit board.

1 6. The restraint system of claim 5 further including heat sink also disposed between said
2 backing plate and said springs, said heat sink further disposed between said electronic component
3 and said springs.

1 7. The restraint system of claim 4 wherein said upper ends of said posts comprise tips formed
2 between the distal end of the post and the stop surface, each tip having a smaller cross section at its
3 distal end than at the stop surface.

1 8. The restraint system of claim 4 wherein said upper ends of said posts are substantially
2 conically shaped.

1 9. The restraint system of claim 1 wherein said clip includes protruding members which
2 define a hole in which said post is inserted, said protruding members are pushed apart as said clip
3 is pushed along said post towards said stop surface.

1 10. The restraint system of claim 1 wherein said post has a plurality of stop surfaces for
2 engaging said clip.

1 11. An electronic assembly, comprising:
2 a circuit board;
3 a backing plate;
4 a plurality of springs;

5 a plurality of posts extending from said backing plate through said circuit board and said
6 springs, each post having a stop surface;
7 an electronic component and heat sink sandwiched between said circuit board and said
8 springs; and
9 a plurality of clips, one clip per post, which, when inserted onto said posts, are pushed
10 down the posts towards said backing plate until the clips engage the stop surfaces of
11 said posts, said clips compress said springs as the clips are pushed toward said stop
12 surfaces.

12. The circuit board of claim 11 wherein each clip includes protruding members which define
a hole in which said post is inserted, said protruding members are pushed apart as said clip is
pushed down said post towards said stop surface.

13. The circuit board of claim 11 in which said posts have a distal end opposite said backing
plate that includes a tip that has a cross section that increases from the distal end of the post
towards the stop surface.

14. The circuit board of claim 13 wherein each post has a plurality of stop surfaces for
engaging said clips.

15. A clip plate assembly used to mate a component to a circuit board, comprising:
a substantially flat plate;

3 four clip retainer members protruding from said plate, each clip retainer member adapted to
4 hold a locking clip;
5 said clip plate assembly placed over four posts protruding from a circuit board, each post
6 having a stop surface, and said clip plate assembly pressed down over said posts
7 until said locking clips engage said stop surfaces thereby mating the component to
8 the circuit board.

1 16. A component used to secure a device to a circuit board, comprising:
2 a backing surface; and
3 a plurality of posts extending from said backing surface, each post having a stop surface
4 near a distal end of the post opposite said backing surface, said stop surfaces used to
5 engage clips when said component is used to secure the device to a circuit board.

1 17. The component of claim 16 wherein each post has a tip at its distal end that has a cross
2 sectional area that increases from the distal end of the post towards the stop surface.

1 18. The component of claim 17 wherein said tips are substantially conical in shape.

1 19. A method of securing an electronic component to a circuit board, comprising:
2 (a) placing a backing plate having a plurality of posts extending therefrom through
3 corresponding holes in the circuit board;
4 (b) placing the electronic component on the side of the circuit board opposite said backing
5 plate;

6 (c) radially disposing a spring on each of said posts;
7 (d) pushing a clip plate assembly having a plurality of locking clips down over said posts
8 until said locking clips engage locking surfaces on said posts.

1 20. A computer system, comprising:
2 a processor and heat sink;
3 an output device coupled to said processor;
4 a circuit board;
5 a backing plate;
6 a plurality of springs;
7 a plurality of posts extending from said backing plate through said circuit board and said
8 springs, each post having a stop surface;
9 said processor and heat sink disposed between said circuit board and said springs; and
10 a plurality of clips, one clip per post, which, when inserted onto said posts, are pushed
11 down the posts towards said backing plate until the clips engage the stop surfaces of
12 said posts, said clips compress said springs as the clips are pushed toward said stop
13 surfaces.